15621 SE 26th Street
Bellevue, WA 98008
November 20, 2000

Dear Friends:

I am indebted to Dan Howard for granting permission to reprint the following piece on the E.F. Johnson Company. Dan is a Keyletter correspondent and publishes *Old Familiar Strains*, a bimonthly newsletter designed to further the exchange of information of interest to antenna insulator collectors. If you would like to be included on the *OFS* mailing list, send your name, address, telephone number and e-mail address to Dan. An annual donation of $15 is requested to cover the costs of producing and mailing the newsletter. Please address all correspondence to:

Old Familiar Strains
C/O Dan Howard, editor
2940 SE 118th Ave.
Portland, OR 97266-1602
strains@insulators.com

Introduction

Edgar Johnson founded the E. F. Johnson Company of Waseca, Minnesota in 1923. In addition to being a major supplier of commercial radio equipment, for many years the company prided itself in selling "everything" a radio amateur might need.

The 1920's and before

Edgar F. Johnson was born on a farm near Waseca, Minnesota, in 1899. In 1903, Edgar's father, Charles J. Johnson, moved the family from the farm into the city of Waseca where he worked as a homebuilder, and later owned a hardware store.

Edgar's first experience with electronics occurred when his half brother, Charlie Nelson, strung lines between two neighborhood houses for Morse telegraphy."[1](1:1)[2] "It didn't work very well, likely because of the many questionable splices in our discarded rusty telegraph wire. But our eyes were opened to a whole new world."(2:4)

"I discovered *The Experimenter* magazine, and acquired treasured catalogs of the Electro Importing Company of New York and the William B. Duck Company of Toledo. My few pennies went for gadgets and hardware such as a coherer, headphones, and the like which I couldn't very well make."(2:4)

---

[1] Charlie Nelson went on to run his own business, the C. H. Nelson Company in Radpidan, Minnesota. C. H. Nelson subcontracted for Johnson during World War II (The Viking News 4/14/44).

[2] The first digit in the end note number refers to the end note number. The second digit refers to the page in that document.

While still in high school, Edgar built an experimental amateur radio station, employing a crystal detector and spark transmitter. "There was no one within listening range of my feeble spark transmitter, and there was apparently no other transmitter near enough for me to hear, if indeed I ever succeeded in locating the cat whisker on the sensitive spot of my galena crystal.(2:4) Restrictions imposed during World War I put a temporary hold on his budding amateur activities.(3)

Edgar's experiences in radio were a deciding factor in his choice of an Electrical Engineering degree at the University of Minnesota. "I was in their first course in radio theory."(2:4) Arriving home for Christmas during his senior year, Edgar set up Waseca' s first broadcast receiver.(1:1) "I brought home a regenerative receiver I had put together. I recall I borrowed the single vacuum tube it needed. Only the month before, KDKA had made broadcasting history on November 2, 1920, by airing the results of the Harding-Cox presidential election. A few friends eagerly listened with headphones to KDKA in Pittsburgh."(2:4)

Following his graduation in 1921, Mr. Johnson entered into a partnership with another Waseca radio enthusiast, Howard Deichen. Mr. Deichen had started an electrical business in Waseca, and he and Edgar Johnson did business together for a year and a half. Together the young men constructed electric lines and sold radios and parts. According to one account, Mr. Deichen caused a real sensation with his mobile radio outfit in the early 1920's. Mounting a commercially built battery-operated radio in his Willys automobile, he hung a multi-wire flattop antenna front-to-back about two feet above the roof of the car. It must have been quite a sight running around town!(3)

Edgar met his future wife, Ethel Jones, at the University of Minnesota where she was studying to be a teacher. Graduating before Edgar, she taught school briefly in North Dakota prior to their July 28, 1923, marriage in Clairmont, CA.

In October 1923, Deichen and Johnson went their separate ways. Deichen continued building rural electric lines under the name Electric Construction Company. Edgar Johnson joined his wife in forming the E. F. Johnson Company on October 10, 1923.

Beginning with assets of about $2,500, mostly in inventory of parts used for home broadcast receivers, Johnson's first location was a small storefront in Waseca. Edgar's father Charles was manufacturing furniture and cabinetry at the location and he offered Edgar space rent-free. During the 1924 World Series, Edgar set up a radio with an outdoor speaker that drew large crowds of baseball fans to his store. The early business focused on selling radio parts to amateur radio operators by mail and selling broadcast receivers and parts locally.(4)

At first, income from the radio business was not overwhelming. To supplement his income, Edgar Johnson worked part time for his father in the woodworking shop making and repairing window sashes or screens. The Johnson's maintained an office at home, where space was available for tracking orders and handling paperwork. Mrs. Johnson managed the office details while Mr. Johnson took care of the sales and technical aspects of the business.(4)

In late 1924, after a year of operation, the Johnson Radio Store was moved to a new location at 104 N. Main St.(3) The additional space allowed the company to deal with growth and gave Edgar the chance to respond to requests from customers for parts not in stock. The extra space was necessary, but the stiff $65 per month rent expense threatened to pull the fledgling company under.

After only a few months in business, Mr. Johnson had the opportunity to buy out stocks of radio transmitting parts from distributors who were quitting business. While the transmitting parts were in demand from commercial broadcasters and amateur radio operators, the market in Waseca was rather limited. Selling quantities of parts necessitated opening a mail order business.

Ethel Johnson contributed her savings from teaching to fund the first one-page flyers. Mailings went out to schools, broadcasters, and the thousands of hams who were listed in the *Call Book*. E.F. Johnson's early catalogs were called HAMALOGS. At the time Johnson had not established a regular line of its own parts. Instead, the HAMALOGS cataloged radio equipment from other manufacturers, including telegraph keys and sounders made by Signal Electric and Vibroplex. When the company discontinued its mail-order sales to amateurs in the late 1920's, the HAMALOG sales booklets were replaced by numbered Bulletins or Catalogs. While Johnson gladly provided the catalogs to anyone who wanted them, they made it clear that customers should contact their local dealers to purchase Johnson parts.

Johnson's ad in the November 1924 issue of QST magazine was the first in a series of monthly ads that lasted for decades. Johnson also took out multiple-page ads in the annual *Radio Amateur's Handbooks* that the ARRL published. Print ads in *QST, Radio, Radio's Master*, and other amateur publications were a way of introducing new products and supporting Johnson's network of dealers. Ads always encouraged amateurs to write for a catalog or to contact a dealer.

1925 saw the hiring of E. F. Johnson's first outside employee, Amos Sorenson.(5) After seeing the company's mailings; he inquired if a position might be available. Mr. Sorenson had knowledge of radio and accounting, making him doubly attractive to the company. While she remained a full-partner in the business, after Mr. Sorenson began helping Edgar with front-office chores, Mrs. Johnson was able to take a lesser roll in the day-to-day operations.

Even with Mr. Sorenson's help, by the fall of 1925, work was still piling up. At this point Edgar turned to his brother Marvin L. Johnson for help. Marvin had been coaching high school sports and had helped out at the store during summer vacations. The school found a mid-season replacement for Marvin, and he joined the firm full-time. Marvin Johnson managed the radio parts store and also sold home appliances. According to Roy Myers, "Marvin had his "white goods" (refrigerators, washing machines, and such) in the front part of the store, and we did assembly in the back part. Marvin also sold Philco brand radios in the 1930's."(6)

Don Wallace, W6AM, became the company's first outside sales rep in 1926. By the end of the decade, the company had shifted to selling its products through dealers and distributors and had discontinued mail-order sales to amateurs.

Edgar Johnson's ham radio call sign, 9ALD, appeared in early ads and was prominent on the cover of the company's HAMALOG catalogs. I believe that Mr. Johnson's ham license may have opened some important doors in the early days of the company:

- Johnson's first sales representative, Don Wallace, was an active ham.
- C.W. Kettron of Illinois Porcelain was one of Johnson's first insulator suppliers. He was also a licensed ham.
- And we've already mentioned the company's long-term relationship with the Amateur Radio Relay League.

One of Mr. Johnson's goals in starting the company was to provide supplies that hams might need. Hams continued to be avid consumers of the company's products until most of its amateur equipment lines were sold in the 1970's. Strangely, Mr. Johnson apparently let his own amateur license lapse in the late 1920's (probably because he was so busy with his work and his family commitments).

The 1930's

Edgar Johnson co-authored an article that appeared in the January 1934 issue of *QST* magazine. "*A Practical Transmission-Line System for the Doublet Antenna*" is not just a useful reference on antenna theory. It also forecasted three of the company's future products: the patented transposition insulator, the Q antenna, and the Johnson Matchbox antenna tuner.

In 1936, the company opened a 5,000 square foot factory on 206 2nd Ave. SW. Its cost, including land, was $12,500. At the time the company had 17 employees.

The company's best-known trademark is E. F. Johnson's own name, of course. But the company also used several other famous logos. In the 1920's, HAMALOGS featured a "9ALD" logo based upon Mr. Johnson's ham radio callsign. Ads from the late 1920's until early 1938 feature a trademark circle with a lightning bolt crossing it. Lightning, or sparks, has long symbolized electricity and radio, probably dating from the days when spark transmitters were the primary means of radio communication. In the summer of 1938, Johnson first utilized the now-familiar Viking head logo. Though I'm not sure of the origin of the symbol, I believe that it was a tribute to Mr. Johnson's Swedish heritage and the Scandinavian population of Minnesota. Later, the Viking head symbol and the name "Viking" became almost synonymous with E. F. Johnson.

The 1940's

"We didn't realize it, when orders for our radio components gradually accelerated by 1940 and 1941, that much of it was related to preparations for war. More help was needed, and Marvin and I asked our brother Everett to join us. That occurred in the spring of 1941 when he could be released from his teaching position. This completed the family partnership of Edgar and Ethel, Marvin and Mildred, and Everett and Ruth Johnson."[3](5)

Once war was declared, the company's output went exclusively to approved defense purposes. Production and employment levels soared as the company did its part for the war effort. One published report says that the company's plant expanded every year 1941 through 1945.(4:1) A Johnson ad in the January 1943 QST says that in two years the company expanded its floor space by a factor of 4, its employees by a factor of 10, and its dollar production to fifteen times! Because of the defense work going on, Federal inspectors were a regular sight at the plant. Special guards were employed to protect the vital production from spying and from sabotage.

An internal newsletter, *The Viking News*, was started for purposes of morale and for disseminating information through the now-larger company and its many employees who were absent while serving their country. A typical letter published in 1944 was from an employee serving the military at an overseas station. In it he sends greetings to his friends and family and thanks the company for sending a Christmas care package to him.(8:2) A bi-weekly, the first Viking News was published April 22, 1942. The last issue came out September 17, 1948. Today these magazines provide an invaluable insight into the activities at Johnson and the state of the county at the time.

---

[3] The three brothers and their wives continued to operate the company as a partnership until 1953 when they incorporated.

"E" for Excellence awards were an important mark of prestige during World War II, and Johnson won three of them for its defense efforts. Quoting here from The Viking News:

> "The Navy "E" award was originated by the Navy in 1906 to be used in the fleet. First awarded to ships for "Excellence" in gunnery, it was later extended to include outstanding performance in engineering and communication. As a tribute to outstanding production, it was still later available as a joint Army-Navy award to a very few manufacturers or other organizations.
>
> Some of the more important factors taken into account in making the award were quantity and quality of production, procurement of materials, utilization of existing facilities and provision of additional capacity. Other factors were plant protection, effective management, good accident record, conservation of critical materials, and overcoming of production obstacles."(9:1)

Johnson's first "E" award was announced in a letter from the War Department dated March 11, 1944. An awards ceremony was booked at the Central High School auditorium on the evening of April 11th. Johnson had special invitations printed, and an illustrated commemorative brochure was produced.

On the evening of the event, a representative of the Under Secretary of War presented special "E" pins to a ten-member employee delegation.[4] Edgar Johnson and an employee representative received the company's "E" pennant, which was flown with pride atop the company's building. An employee chorus sang. The high school band played. And, after the colors were retired, and a closing benediction, the evening was capped off with cigars and dancing.

Under the terms of the award, the company was allowed to receive an additional Excellence award every six months. When the second "E" was awarded at a ceremony on October 30, 1944, all employees hired since March 11 (and still on the payroll on September 23, the date of the second award) received their pins. Johnson was given a new "E" pennant with a white star on it to signify that it was their second award. The third award was dated March 24, 1945, and the company's "two-star" pennant was received at an afternoon ceremony on April 25th.

Roy Myers said that they primarily made radio components during the war. They also made a few complete radios including several-hundred smaller base-station transmitters for the U.S. Signal Corps. Roy supervised 300 employees, in three shifts daily, making condensers. Mr. Myers was eventually moved into the office as an order-expediter, rubbing elbows with reps from RCA, Motorola, and other major companies.

Johnson's Manufacturer's Designated Symbol was CEJ, their Federal Source Code, 74970.(10) Telegraph keys are known with this number, but we believe that the company did not sell strain insulators to the military. I recently found a No. 62 stand-off with the both a rubber stamped mark (CEJ-61) and a decal marking (CEJ-6 1474). It may have been a component of one of the radios the company sold under military contract, or it could have been a spare part for one.

---

[4] Hundreds of others received their pins in the school gymnasium after the formal ceremony concluded.

At the close of the war, Johnson was providing employment to 500[5] and had expanded into space "in the Lewer garage, a grocery store, and the Oddfellows Hall."(1) Once the need for secrecy had passed, an open house was held at the company's facilities, and thousands toured during the two-day event.(5)

Returning to non-defense production in 1947, Johnson updated its part numbering system. Part numbers now started with a three-digit equipment class code. Stand-off and thru-panel part numbers now started with "135-". Antenna insulator part numbers now started with "136-". Aside from the class code, the actual part numbers did not change.

In the early 1920's Johnson was essentially a radio parts jobber. The HAMALOGS of the 1920's featured telegraph keys and other products that hams needed but did not include many Johnson-brand items. These "non-Johnson" lines were dropped in the late 1920's when the company began focusing on the promotion of its own Johnson-brand products. In 1947, the company again offered telegraph keys for sale, this time under the Johnson brand name. Clearly, the acquisition of the Speed-X line of keys in the summer of 1947, was a strategic move for Johnson. It not only expanded the number of products that Johnson could offer, but it allowed Johnson to continue to utilize the employee base and production capacity that had been developed during the War.

And another strategic acquisition took place at this time. E.F. Johnson added pilot lights to its catalog when it acquired the Gothard line of indicator lights from the Gothard Manufacturing Company of Springfield, IL. All tools, dies, inventories and rights were transferred to Johnson's Waseca, Minnesota campus where production continued.

Despite the new acquisitions, post-war employment levels dropped as low as 218 in 1948, before growing again later.(4) Amateur radio privileges had been suspended since the declaration of war. After the war, would-be hams could not wait to get their amateur radio licenses and get back on the air. This caused an unprecedented demand for amateur radio equipment. Cheap and plentiful war-surplus parts offset some of this demand.[6] The balance had to be satisfied through new domestic production because overseas industry was still rebuilding.

Technological advancements during the war were reflected in the new products being offered to hams. Coaxial cable was now available for feed lines. Rotable Yagi-style beam antennas began to make inroads into the prewar wire antenna market.

During the War, Johnson had gained experience assembling complete transmitting and receiving units for defense purposes. In the late 1940's the company introduced a line of radio equipment for amateurs. The first amateur transmitter, The Viking I, was available in kit form. Later sets were also available in kit form or "factory wired." Roy Meyers says when the company would get behind filling orders for factory-wired sets, he, and other employees, earned extra money assembling and wiring the sets at home. The sets were tested and inspected at the factory and came with the same warranty as the other sets. Soon pre-assembled Johnson Viking transmitters, receivers, amplifiers, and accessories were being offered.

---

[5] According to Roy Myers, the town had a population of about 4,000 at the time.

[6] Some radio parts manufactured during World War II are still available new through surplus dealers.

About this time Johnson introduced the legendary Johnson Matchbox antenna tuner. Even today, thirty years after the line was sold to the William Nye Company, Johnson Matchboxes are held in high esteem in amateur circles. Many hams will testify that they are the finest antenna tuners ever made. Johnson sold the Matchbox in two sizes. The company first introduced the 250-23, which was rated for up to 250 watts. Later the 250-30 (the "Johnson Kilowatt") became available. It could handle the maximum legal power for all amateur bands, 10 meters through 80, with no changing of tuning coils. We close the discussion of the 1940's with an important, but sad, moment in the company's story. In January 1942 a fire started in a business next door to the company's Main St. location. The fire eventually spread to Johnson's store, bringing to an end the company's retail activities. Roy Myers recalls standing and watching the store burn from the windows of the 2nd Avenue factory, which was just around the corner.

The 1950's

According to Roy Myers, Johnson built as many as 20 transmitters for Voice of America radio stations during the cold war.

In November 1953, the Johnson's three-family partnership was converted to a corporation. Everett Johnson became the corporation's first secretary and treasurer, and eventually became a vice president. Marvin Johnson became vice president, later chairman of the board of directors. Edgar became the company's president.

In 1956, the first phase of construction at the company's new location was completed. This 22,000 square foot building was used first for equipment assembly. Later it was converted to shipping and receiving and sheet metal and machine shops. Ground was broken on a second phase in 1959.

The 1950's saw the company's continued growth in the area of amateur communications and the commercial communications market. In the late 1950's, Johnson began its domination of the newly created markets for business band and citizens band communications equipment.

The 1960's and on

In 1960, work was finished on the company's new campus location. For the first time in twenty years, all of the company's manufacturing and administrative functions were housed under one roof.(3) Functions that had previously been housed in six different locations were brought onto the new campus. Phase II included 113,000 square feet of office, laboratory, manufacturing, and storage space.(3) An open house was held June 2 and 3, 1961, to show off the newly completed facilities on 10th Avenue SW.(5)

On August 14, 1968, Johnson acquired Communications Company (COMCO), a Coral Gables, Florida, company.(11:5) Johnson retained COMCO's Coral Gables facilities and continued manufacturing there. This marked the company's first expansion outside of Waseca. COMCO's lines of FM communications equipment were a good fit with the lines already under development, or in production, at Johnson.

In October 1972, Johnson sold its line of telegraph keys, its matchbox, and its antenna coupler to William Nye of Bellevue, Washington.[7]

On the fiftieth anniversary of the company in October 1973, the company celebrated with its third-ever public open house. On November 21, 1975, The Radio Club of America awarded its prestigious Sarnoff Citation to Edgar Johnson. He was the second person so honored. The Sarnoff Citation is presented to club members who have made significant contributions to the advancement of electronic communications. In 1975, the RCA created the Pioneer Award for club members who have contributed substantially to the success of the club or to the art of radio. The award was later renamed the Edgar F. Johnson Pioneer Award in his honor.

Edgar Johnson retired from the board of directors of the E F Johnson Company on October 10, 1983, the 60th anniversary of the day that he and Ethel founded it.

Conclusion

I must again thank the many, many people and organizations that have helped with this project. I had no idea when we started that I would be meeting and working with so many people before the article was in the mail. ***Dan Howard.***

End Notes

1. *"In Memory of Edgar F. Johnson and Ethel Johnson," Johnson Week* February 1991.
2. Johnson, Edgar F., *"A Lifetime of Radio," Proceedings of the Radio Club of America*, Midsummer 1972.
3. Hanson, Gordon, June 2, 1961. *"E. F. Johnson Co. Open House Recalls Early Days and Small Beginning of Electronic Firm."*
4. *"Waseca Couple's Partnership Expands Local Radio Enterprise Becomes Three Family Affair," The Waseca Journal*, March 17, 1948.
5. Johnson, Edgar F., *"A Nostalgic Look Back"* October 1973.
6. Myers, Roy, interview with Phillip Drexler, July 28, 2000.
7. Johnson, E.F. and Ralph P. Glover, *"A Practical Transmission-Line System for the Doublet Antenna", QST*, January 1934, pp. 17-21.
8. Boeke, Jack, letter, *The Viking News*, March 17, 1944.

---

[7] See the N7CFO Keyletter 8, page 83.

9. *Army-Navy 'E' Award Given to Company - One of Few Firms so Recognized, The Viking News*, March 17, 1944, pg. 1.

10. Chesson, F.W., "*Electronic Military Equipment Naval Equipment Manufacturers*," *AWA Review*, Vol. 7, 1991, Holcomb, NY.

11. "*Johnson Company Acquires COMCO*", *The Waseca Journal*, April 27, 1973.

++

What Burlingame Did is the title of a small hardbound book that I recently purchased on Ebay. This book was written in 1908 by Robert Cleveland, and the sub title is "A True Story of a Young Electrician". It is interesting to note that it was published by the "Burlingame Underwriters" and was apparently written to generate interest in the purchase of stock for the Burlingame Telegraphing Typewriter Company. Unfortunately, this book is long on rhetoric and short on facts about the equipment. It provides little information about the device which is my main interest. Photographs are provided of the "Burlingame Telegraphing Apparatus" attached to a Stearns Typewriter and to a L.C. Smith Typewriter. The photos are good, but it is impossible to figure much out.

The following is the description of the operation of the equipment:

> "He takes two ordinary typewriters of standard make, such as the Stearns, L.C. Smith, Underwood or Monarch. The two that the writer observed were the "Stearns," and they were the same machines that one would buy in the market for office use. Each was equipped with the electrical apparatus to set the electrical waves in motion and record them at the other end.
>
> The operator sits at the sending typewriter and operates the machine just as the ordinary stenographer types letters. The message is recorded on the receiving instrument as perfectly as though it were a carbon copy of the original. Likewise the sending machine makes a copy of the message just as it is sent. The system is a sending, receiving and recording operation, all in one.
>
> Each letter on the keyboard, as well as the characters, numerals and punctuation marks has its own individual combination of electrical impulses. By magnetic attraction the type bars on the receiving machine are attracted toward the roller where the paper rests.
>
> When the letter "A", for example, is struck on the key of the sending machine, a set of electrical impulses is set in motion over the wire which releases the letter "A" on the receiving machine and the type prints the letter on the paper roll. So on through the whole keyboard the operation is the same. In like manner, the shift key, the device for changing from capitals to small letters and vice versa, the spacing between words, the return of the carriage and the spacing for the next line, all are operated automatically in simultaneous action with the movements of the sending machine. Thus anyone familiar with the letters on the keyboard of any typewriter can send a message just as easily as he or she would typewrite a letter; and the message is recorded on the receiving machine in page form, corresponding to the usual typewritten business communication.

The book describes all sorts of uses for the machine, including credit checks, the stock market, prevention of railroad wrecks and reporting fires. It is interesting to note that it is stated that "the system will work by wire or wireless" though it gets wonderfully vague at that point.

Stock certificates from the "Burlingame Telegraphing Typewriter Company" turn up all the time on ebay, but I have not been able to find out any other information about the company itself. It looks like they vanished shortly after the book was written. What I really need is somebody in the San Francisco area to do some research!

Vibroplex Brass Racer EK-1. John Elwood sent a note indicating that the new Vibroplex catalog states that the Brass Racer EK-1 is no longer available. These were never a big seller, and may be a good collectors item in the future.

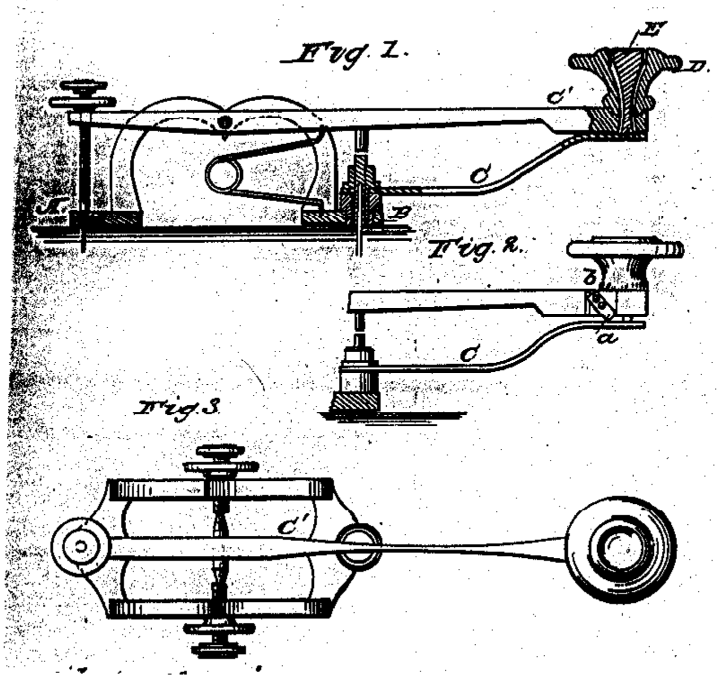
Ahern and Soper. Ahern and Soper was a local family business that started late in the 19th century when there were many small electrical utilities installing hydro generating plants on the local rivers and I suspect that they branched off into other related electrical projects. I think the key and other telegraph pieces I have may have come from one of the local railway telegraph offices when they were being dismantled after the war. Ahern and Soper is still in Ottawa and they are now a distributor for some of the electronic equipment manufacturers. ***Richard Morrison.***

Key nomenclature -- front and back of a key. In reviewing the literature, and in conversation with active key collectors, it is evident that there is a lack of uniformity as to the front and back of a key (used here to include straight key, bug or paddles). As a long time collector of hand tools, it has become my understanding that a tool is a device which allows a person to perform a function with greater efficiency than possible with his or her own unaided mind or body. A stone in the hand is a simple tool, a station in space is a complex tool. In virtually all cases, where a tool is held or controlled by the user, the front of the tool "looks" in the same direction as the operator -- as a wood working plane, a wheel barrow or an automobile. If this concept is acceptable, then it follows that the front of the key is the end that "looks" in the same direction and is farthest from the operator and the back of the key is that end which is controlled by and is closest to the operator. ***Stan Riome.***

The Other McElroy? Wyn Davies sent copies of United States Patents 91,955 and 93,728. The following are excerpts from the text. You will need to carefully examine the drawings to understand what McElroy is talking about.

> **Patent 93728.** Be it known that I, James H. McElroy of Warwick, Orange County, New York, have invented a new and improved Self-Closing Telegraph-key; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.
>
> This invention relates to improvements in telegraph-keys, whereby it is designed to provide an improved self-closing arrangement, by the employment of only one spring, so guarded that it cannot be opened by any slight inadvertent touch, or by anything dropping on it; also the combination therewith of a simple and convenient cut-out device. To the latter, a spring, "C", is connected and fixed, so as to have a constant tendency to bear against the underside of the end of the key "C", whereon the finger-piece "D" is located. The said finger-piece "D" is made hollow, the said hollow being enlarged near the upper end, and a secondary finger-piece, "E", is arranged therein, having a concave top of about the proper size to receive the end of the finger sufficiently to be pressed slightly downward when the finger is applied to the piece "D", to operate the key, but the said secondary finger "E" does not project above the top of the piece "D". When the operator ceases working, the circuit will be instantly closed, through the spring

"C" resuming its connection with the end of the key. In order to provide a convenient means for cutting out the circuit, I provide a button, "a", having a small stud at one end, and cam-shaped at the other, and pivot it to the key in a recess, the shoulders of which will prevent the key from turning more than required, of non-conducting material, and so arranged, with reference to the spring, that it will bear upon the upper surface thereof, and separate it from the key when moved in one direction, and suffer it to restore itself when moved in the other. By preference, I arrange the said button on the right side of the key "C' and in such a position that the thumb will be in contact with it while the key is being operated, whereby is it most conveniently arranged to be moved in one direction or the other, as the operator applies his hand to or takes it from the key, without delay.



Patent 91955. Be it known that I, Jim H. McElroy of Warwick, in the county of Orange, and State of New York, have invented a new and improved Self-Closing Attachment for telegraphic Keys; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art of make and use the same, reference being had to the accompanying drawings, forming part of this specification. The object of this invention is to provide a key for telegraphic apparatus, which is so constructed and combined with a device for closing and breaking the current, as to permit the operation of breaking the current, and holding the same broken, to be conveniently preformed by the operator when manipulating the key, and also to cause the current to be closed in a self acting manner when the operator removes his hand from the key, thereby avoiding the inconvenience and delay which frequently arise from the inadvertence of the operator in neglecting to close the circuit through the key after he has finished operating.

It consists of a spring-pole plate, in combination with any upright lever-key and so arranged as to bring the finger-piece, by which the pole-plate is removed from contract with the key when the current is to be broken, in the centre of the finger-plate by which the key is operated. The plate “i” is provided with a stem, which passes up through the insulated finger-plate “g”, and terminates in a finger-piece, “i”, of any suitable insulating material. The current enters the key-frame and key through the north pole, or wire “N” , and sensitizes the key. The circuit is closed by the pole-plate “i” being in contact with the key, as shown; and the current passes, through the spring “h”, to the boss “m”, with which the south pole or negative wire “S” is connected, as shown, the said boss being insulated from the frame “B” by the insulating material “K”.

When the operator is using the key, the finger-plate “g” is held between the thumb and second finger, leaving the first finger free, and conveniently over the finger piece, “i”, of the attachment, so that the circuit can be broken, and so retained, by simply pressing upon the said finger-piece. When the hand is removed from the key, the spring “h” causes the pole-plate to come in contact with the key, and the circuit is closed, thus obviating trouble and delay by negligence in closing the circuit, as before mentioned.

Fig. 1

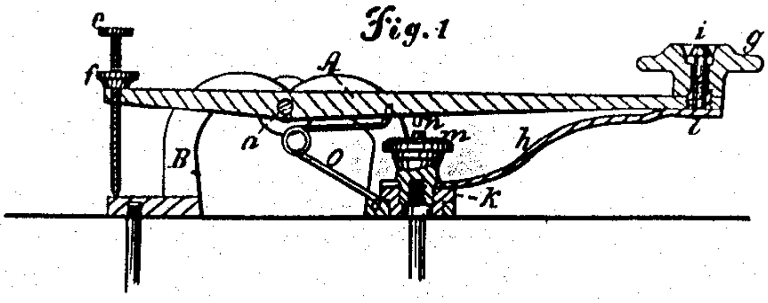
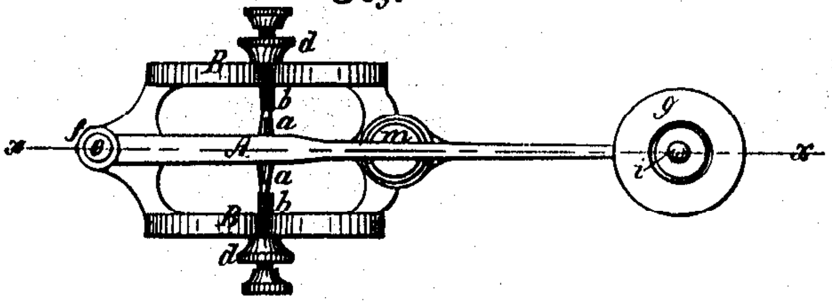


Fig. 2



Morsecode bits and pieces:

Western Union Glass Signs. I obtained two glass signs a few years ago. One of them has "WU" painted on the back of it, so I assumed they were used by Western Union. I had never seen any other glass signs from any telegraph company before or since. I didn't think I'd ever find any more info about either of them. About a month ago, I was surfing the TV channels with my remote, and came across the movie "Here Comes the Navy" with James Cagney, filmed in 1934. In the movie, Cagney's girlfriend works in a telegraph office (the Tel. Co. was not specified). I couldn't believe what I saw when they showed the interior of the office. I started up my barely-working VCR and recorded the scene. Amazing! As Cagney and his navy buddy are leaving the office, a second glass sign can be seen hanging on the wall. It is almost the same as my other glass sign, but the wording is slightly different. I ran out of film, so couldn't shoot that one off the TV. In the time after seeing the movie, I received a copy of Neal, K5RW's 1925 catalog of WU signs. The catalog shows similar glass signs, called "flash glass" but none match what I have or the ones in the movie Anyway, I'm positive now that my signs were used by WU. You never know where clues will turn up. ***Gerry Maira.***

Leach Speedo-Plex bugs. I can't give you a date when Leach began making Speedo-Plex bugs, however, about 15 years ago I met an old time sparks who was an agent for Leach in the days of spark. He said that he sold the bug and the relay as a pair and often went aboard ship to install them. So this gets us within a few years, late spark era - about 1922. *Neal McEwen.*

Costa Rica National Museum. I just got back from a month was in Costa Rica. On the last day there I visited the National Museum in San Jose. The National Museum was the headquarters for the Costa Rican Army until the government officially abolished the army in 1948 after the revolution there. So, naturally there are many artifacts from the original building there. Yep...you guessed it. There's a beautiful old Bunnell combination relay/sounder/key set there that was apparently used by the Army. I believe these were called mainline combination sets, and MESCO also made them, and they date to the 1905 ballpark plus or minus a lot, probably. ***Russ Kleinman.***

Spark Era. There is not an easy answer to the definition of "Spark Era". It really deserves a monograph all its own. Once you make a general observation, there will always be exceptions. The first one to address the topic becomes a lightning rod for others. For example, my good friend Jack Lally, W1HDC, retired RO, states that he heard/worked the coastal station on St. Pierre in 1950 that was using a rotary gap spark rig. Leroy May, W5GN, local ham, used his spark transmitter until 1926. Instead of trying to make a categorical statement on the amateur community's conversion to spark, I'll defer to Clinton De Soto's *Two Hundred Meters and down* In 1921, 80% of all military and commercial transmitters were of the Poulsen arc type. Arc is a completely different technology than spark, though they are often confused. Arc transmitters are CW transmitters, although they do not use vacuum tubes. The navy realized that arc would replace spark before World War I. Maintaining spark transmitters was a matter of economics and radio law. Radio law forbid the installation of new spark transmitters early on except for low power rigs. The details are buried in the International Radio Conference proceedings. The best summary of the topic is in short pieces in George Codding's Ph.D. thesis "*The International Telecommunications Union, an Experiment in International Cooperation,*" 1952. Some ships carried spark rigs as emergency transmitters until W.W.II and beyond. *Neal McEwen.*

Biggs key. I got a letter while I was gone from a ham with a picture of a key patented Oct. 26, '86 by John Marion Biggs, Louisville, KY. Has anyone heard of this manufacturer before? ***Russ Kleinman.***

RAF "Bathtub" Key. On a visit to the Com-Centre in Auckland, New Zealand, earlier this year, I was shown a "RAF Bathtub" key and asked what it was. As this is a pretty common key I was able to tell them quite a bit about the key. When I was at pre-sea college in the 1960's we used to buy bathtub keys for a shilling or two, take off the knob and chuck the rest of the key away. The knob fitted a WT 8 Amp No2 Mk 2 perfectly (and many other keys) and was very popular. You still see many keys today modified with knobs from, or similar to, the Bathtub key.

The Com-Centre published my summary of the key, including the usual story about the clip being used to hold the key down when the plane ditched. This article brought the following response from ZL2AKV, which I think you will find of interest: "This particular key was wired up to the 1154 transmitter and the associated 1155 receiver in Harvards and Ansons. Admittedly the key had a terrible touch, but operationally they were thumped with a heavily gloved fist during the Canadian winters and often as not the aircraft was in turbulence. The transmitters could not be tuned until the aircraft engines were started. Then the case clip was moved onto the shoulder of the knob to clamp while tuning up. If tuning was started in the cold, then the aircraft batteries would revert to zero! Further the cunningly designed bakelite case was to enclose any spark gap in order not to blow up the aircraft in the event of a fuel leak!" ***David Smith.***

Thread repair. Take the screw or bolt and put a light coat of oil on threads. Insert in hole that is filled with epoxy or "JB Weld", work epoxy around till hole is completely filled with compound. Let sit overnight and simply unscrew bolt or screw from hole the next day leaving threaded hole. ***Don Karvonen***

U.S. Navy American Morse. I finally have confirmation for what I've known for a long time, but was unable to reference. Today while poking among used books I found "How to be a Wireless Operator," Charles B. Hayward, 1919. In the section on "Learning the Code," is found 'Operators holding commercial extra first grade licenses must be equally proficient in both codes, as when stationed on shore they must receive radio messages and transmit them over landlines.' I also have a U.S. Navy advancement form for Radiomen, circa. World War I. It requires proficiency in American Morse for First Class as well. ***Neal McEwen.***

U.S. Navy American Morse. American Morse was used on land (landline), and Continental was used on radio. I have also been told that Navy radio operators used American Morse aboard ship (for intra-ship communications) as explaining the Nickeled instrument Bunnell KOBs on bakelite base with the Navy anchor on them that we find from time to time. ***Tom French.***

Martin Wireless Loose Coupler. A very interesting item appeared recently on Ebay - a "Martin Loose Coupler. The seller had several nice photos plus the text of an advertisement that stated:

> **PERFECTED TUNING COIL SLIDER.**
>
> I would prefer to sell complete tuning coils because my instruments are a source of pleasure and an ornament to any station. But if you do not want a new coil then bring your old coil up to date by equipping it with these trouble-saving sliders. They move in either direction with perfect ease and freedom, do not cut or displace the wire and the pressure to the contact wheel is, owing to the action of the retractile spring, uniformly maintained at any point along the coil. Supplied for 3/16 or 1/4 inch square rod. PRICE 25 cents each. Postage 6c extra. HORACE G. MARTIN, 78 & 80 Murray Street, New York, NY.

Thinking about this Martin wireless thing kind of rang a bell. I picked up Bill Holly's book and on page 9 it talks about an interview with George Nesbit and Lou Moreau.[8] Nesbit as a boy knew Martin in Norcross. He states that "The Vibroplex parts came here in little boxes and the wire for the coils came in rolls" and "They did have those machines that rolled the coils". Since the Autoplex was long since out of production maybe this wire was for the wireless gear that they were building there. Holly states that this machinery may have been for KOB's or some other product for which no record has been found. Maybe wireless gear was that unknown product. ***Dave Holley.***

---

[8] For a complete transcript of this interview, see Keyletter 20, page 206.

Dunduplex. The earliest Dunduplex appears to be a small compact 2" x 4" box with all parts encased in a box. It was called the "Peerless". There are three buttons on top, one for dash, one for dot and for circuit closing. This bug is advertised in the Jan 1909 *Commercial Telegraphers Journal* and there is a product review in the February issue.

This must have been the model "A", for in August 1909 the Model "B" of the Peerless Key, a dual lever, has a design more like we are used to seeing except longer. By Sept 1910 the Peerless name is gone and it looks like ones you normally see in collections.

Please note that there seems to be no connection to the strange looking bugs made by Peerless Mfg. *Company of Fordson, Michigan and the Dunn Peerless models. Dunn and Peerless would have been* 20 to 30 years apart.

I have seen three basic designs of the Dunduplex other than boxed "Peerless" models discussed above. The one Randy Cole recently posted photos of seems to be the most common. Lets call this one 'single lever - mono pendulum.' I have seen these with serial numbers in the 50xx range. The second most common one is the 'dual lever - forked horizontal mono pendulum.' It has a much thinner base than the one in Randy's photos and the pendulum forks in the horizontal plane; each tine carries a large weight. I have seen these with serial numbers in the 10xx range. The least common is the 'single lever - forked vertical mono pendulum.' The pendulum is forked and the tines are in the vertical plane. I've seen only one of these. Randy's Dunn has a serial number 30xx, so with three data points we see a pattern. Are there others we can use as data points for Randy's estimation theory? Some guys will tell you that some Dunn's have dual pendulums. I have never seen a dual pendulum Dunn. I think they really mean forked pendulum or dual lever. The National Transmitter Co. made a vertical bug, and their ads refer to Dunn patents. *Neal McEwen.*

Western Union. Western Union as a company ceased business completely in 1980's. The Western Union name and trade mark are all that's left and they were sold to a bank or holding company in Atlanta. The brand name and trade mark I believe are only used on the cash transfer product and there is no longer any messaging services. Their last corporate HQ was here in Northern New Jersey and one of the senior VP's took possession of the remnants of the WU museum which they had here. She auctioned it all off several years ago. At Historic Speedwell Village, also here in New Jersey, they have a number of instruments from WU including some of the highly accurate reproductions commissioned by WU in the early 20th century. These include the recording register, the port rule transmitter and first wood frame recorder. *Pete Malvasi.*

J-5 Keys. We all have wondered about L.S. Brach Keys in the past and came to the conclusion that the ubiquitous J-5 and J-5-A keys were used on CW and AM aircraft transmitters in the 1920's and not spark. But what about the "Key and Winker" sets made by International Radio Telegraph Company as the C.Q. 1140 and copied almost exactly as the L.S. Brach J-7 and J-7-A? As I was reading through the 1924 Revision of Robison's Manual, there was the discussion I was looking for. Key and Winker sets were used on Naval Aircraft, with a synchronous gap and generator mounted on an aircraft wing! There are pictures of the Key and Winker sets together with the spark transmitter and generator they were used with. And to answer yet another question...the bulb is there for a purpose. TWO sets were mounted in each aircraft. The first was the pilot's key, the second key was called the "observer's key." Presumably, the observer sat in the seat behind the pilot and by virtue of the bulb, both pilot and observer could transmit and see what the other was transmitting! I have updated the Spark Key Project to reflect this interesting information. For those of you who are skeptical, refer to the picture and diagram on the Spark Key Project under International Radio Telegraph Company. These two jpgs are over 100K and are from the 1924 revision of Robison's Manual. International Radio Telegraph Co. and L.S. Brach have now been added to the list of known spark key manufacturers! ***Russ Kleinman.***

Australian PMG bugs. I learned something interesting about Vibroplexes in Australia at a Morsecodians meeting in Melbourne. Telegraph operations in Australia were handled through the government post offices, not by private companies. The name of the government post office was PostMaster General or PMG as it is commonly called. If you were a PMG telegrapher (or telegraphist as they say here in Australia) and didn't like using a hand key, you could send a letter to the PMG headquarters in your state (there are 7 Australian states Victoria, New South Wales, Queensland, Western Australia, Northern Territories, South Australia, Tasmania) and request a "jigger" or bug. It seems that the Victorian PMG headquarters engraved the bases of their Pendograph bugs *"PMG ####"* with *"####"* representing a four letter stock or item number. *All* Pendographs that I have seen in Victoria have this engraving on the base. All Pendographs that I've seen outside of Victoria (e.g. New South Wales) do not have this number.

At the Morsecodians meeting, someone brought a ca. 1925 Vibroplex with a PMG ### engraved in the base. I remarked that I have seldom seen Vibroplexes here and that I had never seen a Vibroplex with the PMG engraving in the base. The telegrapher I was talking to said he had seen another one just like this one some time ago. It appears that the PMG purchased Vibroplexes from the U.S. in the 1920s and stamped them PMG ####. Of course, there's the slight possibility that they were manufactured under license here but I doubt it since there are so few of them. I mentioned that I had never seen a SIMPLEX AUTO engraved with a PMG #### and the telegrapher noted that he had seen "a couple" over the years but not many more than that. So...if a Vibroplex turns up in your collection with a similar engraved base, it likely spent some time down under. ***Derek Cohn.***

FYO paddles and Hal copies. Every HAL I've seen so far, no matter what version, also had a hand engraved number on the bottom of the base. It is often difficult to see. Hold it with the front of the key (opposite the paddles) pointed to your left. Flip the key over, keeping the front to the left. The number will along the bottom side. I suppose it is possible that an FYO nameplate was removed, but I there are several differences between the parts used by Hills and used in the HAL copies. Also, based my my research so far, Hills built the single levers first. FYI, after several years and several false leads, I may have tracked down the very first FYO which is now back in private ownership. ***Bill Norton.***

Junker Bugs. DK5KE, DF4KV and I visited the Junker factory a weeks ago. I took one of my Junker bugs with me to positively identify it. They had a last piece which survived a flood in 1993, and this model was exactly the same bug as the one I brought, so I am sure mine are Junker bugs. Unfortunately Junker never put labels or serial numbers on their bugs. Nevertheless they are a 100% Lightning Bug clone, and when the friendly man who showed us the rooms saw my Vibroplex Lightning he asked, "Which one was the first ?" When he heard that the appearance of the LB was about 70 years ago he was a little bit disappointed.

The company is located close to the river Rhine, and in 1993 they had a terrible flood. The cellars were full of water, and they lost nearly the complete contents of these rooms. In a suitcase a bug and some of the old original construction plans survived. When I saw this machine I knew which bugs I have. They were produced from 1962 (from March '62 we saw on a first technical drawing) until about 1970 but the company is not sure - a little bit untypical for a German company. Their main customer was the German police which scrapped the very most of them a few years ago (ouch !!!). A retired police radio specialist told me that the radio staff preferred Vibroplexes and purchased them from their own money. ***Martin Odenbach, DK4XL.***

Postal Telegraph bug serial numbers. This is sort of sketchy, but some sense can be drawn from it. These are the only Postal Telegraph bugs that I can get serial numbers for - numbers 1002, 1014, 1035, 1103, and 1122, 1133 and 11XX. Given the numbers so far Neal McEwen thinks that they made about 200 of them, probably starting with serial number 1000. I am sure there are others, but where? Can anyone supply information on any others out there? When Western Union bought Postal Telegraph they destroyed Postal's keys. I guess the question would be, "Why?" In any event, that is why there are probably less than 10 of them out there. Most are painted green, there seem to be only two examples of black. ***Tim Patton.***

Vibroplex continuity. The Original SN 50589 I received recently just wouldn't make dahs. I found the problem was that there was no continuity between the dash part of the pinned lever and the frame. Rather than try to disassemble the lever I put in a quick fix taking a hint from the Vibroplex deluxe keys. A piece of small wire was attached under the dash contact retaining screw and then under the frame. It did the trick and no modification was required to the key. This is not an original or even a very inventive idea but was quick and easy and made a functional key from an otherwise display only item. ***Puck Motley.***

RAF keys. I was just visiting the official site of the Royal Air Force, specifically looking for the date it became known as the RAF. That date was April 1, 1918. On that date the Royal Flying Corps and the Royal Naval Air Service were combined into the RAF. The reason that this bears on telegraph key collecting is that several people have asked me about the date of manufacture of keys/spark keys marked "RAF." Given that the RAF only came into existence April 1, 1918, that gives a "no earlier than" date for keys marked with "RAF." ***Russ Kleinman.***

McElroy pre-tensioners. The McElroy company offered pre-tensioners or “dot stabilizers" in the late 1930s. In general (if it is possible to speak generally about anything Ted McElroy sold), this was a device to add an amount of pre-tension to the dot spring on the pendulum, and was available only on the 1938 deluxe model. Having said that, I have 1938 standard and 1939 (deluxe and standard) models with the device on the pendulum. Whether these came this way from the factory is unknown, because Mac also sold the dot stabilizer separately for 50 cents. They are fairly common (but not always found) on the 1938 Deluxe bug. There are two types - one on which the metal block that screws to the pendulum and holds the finger is "thick" (about 1/4"), and another on which the block is "thin" (less than 1/16"). I believe the former is the earlier style, but I have seen either on almost any of the above mentioned models. ***Tom French.***

The Dow-Key project. I Now have 113 Dow-Keys in the database, and patterns are starting to emerge. I have now established that the Dow-Key company sold bugs with “Brewer, Maine” labels on them. Three of these keys have turned up so far, and Lorraine Dow McIntosh provided me with an early sales brochure that shows the Brewer address. At least two family members lived in Brewer after the war, and this was undoubtedly the connection. If you have a Dow-Key bug and have not submitted information yet, I urge you to do so. I still have a lot of gaps in the serial number ranges, and every little bit of information helps. ***Lynn.***

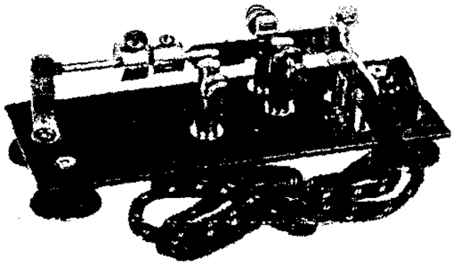
Learning the Code is an extremely simple matter if pursued in the proper manner. It is almost entirely a matter of practice. Anyone from 8 to 80 can learn the code. But one must know HOW to practice—the signals must be sent to you in regular, systematic order, at YOUR receiving speed. Only **TELEPLEX** will give you the steady, systematic practice that you must have to learn the Code quickly and easily.

TELEPLEX CODE INSTRUCTION guides you in every step. It shows you the printed contents of the tapes. It tells the beginner in advance what signals are being made. The more advanced student may check his copy against the printed contents to determine the accuracy of his receiving.

OSCILLATOR

TELEPLEX will close and open an electrical contact according to the perforations in the tape. The contact in turn operates the oscillator, (or Sounder) to give you the audible sound. Therefore, it is essential that you have the oscillator, or sounder, according to which Code you wish to learn. As most beginners already have an oscillator, the price of **TELEPLEX** is shown without it. Most anyone can construct the oscillator. The material necessary is an audio transformer, radio tube and tube socket, sending key and headset. **TELEPLEX CODE INSTRUCTION** contains a diagram and complete instructions for its construction. If you already have an oscillator, ***TELEPLEX*** will operate it. We do not recommend a buzzer as they are seldom satisfactory.

Five reasons why you should select **TELEPLEX:** 1—It is the original Code Instructor using a double row perforated tape. 2—We are originators and not imitators. 3—You can get all of your money back if you are not entirely satisfied after ten days' trial. 4—Although not designated as standard equipment, hundreds of **TELEPLEX** instruments have been purchased by various departments of the United States Government, including the Army, Navy, Signal Corps, Marine Corps, Department of Commerce and Coast Guard. 5—**TELEPLEX** is used as standard equipment by the principal schools engaged in teaching the Code.



TELESPEED is a real automatic key that any professional operator or amateur will be proud to own. The operating button is located at right angles to the base which gives it a perfect balance. It is equipped with vacuum cup feet that hold it firmly to the table. The Model shown is the popular light weight base. **Price $5.60.** Heavy base. **$.75** extra.

BEWARE OF IMITATORS: We are the originators of code instruments using a double row perforated tape.

Teleplex flyer
courtesy of
Robert Baumann

TELEPLEX COMPANY

72 Cortlandt Street - - New York City